

Aeronautical Systems Center

Rapidly delivering war-winning capability through development, acquisition, modernization and sustainment of the world's best aerospace systems.



Rapidly Delivers War-Winning Capability



Aeronautical Systems Center has:

- More than 12,000 Air Force active-duty and civil service employees at Wright-Patterson AFB, Ohio; Brooks City-Base, Texas; and smaller detachments around the country
- An operating budget of more than \$18 billion annually

ASC rapidly develops, acquires, modernizes and sustains state-of-the-art, combat ready aerospace systems for:

- U.S. Air Force operational commands
- Other U.S. military services and government agencies
- Selected foreign governments

In support of:

- Joint and coalition operations
- Aerospace expeditionary forces
- Homeland defense

Every manned fighter, bomber, cargo, trainer and reconnaissance aircraft currently in the operational U.S. Air Force inventory was developed at ASC.



Current high priority programs include:

- Sustaining aging aircraft, such as the B-52
- Modernizing and upgrading existing fighters, such as the F-15, F-16 and F-117; bombers, like the B-1 and B-2; as well as cargo aircraft like the C-5 and C-130
- Implementing innovative advances in the C-17
- Delivering the F/A-22 Raptor
- Developing and acquiring Large Aircraft Infrared Countermeasures (LAIRCM)
- Supporting acquisition of the Airborne Laser and Joint Strike Fighter



Provides the Most Complete Package of Acquisition Expertise in the DoD



ASC's requirement analysts and development planners meet daily with the operational commands to discuss current and future threats. Using this feedback, the analysts and planners are then able to analyze the aerospace systems and technologies that will best overcome those threats. They also help analyze options and trade-offs for individual weapon systems.

ASC program managers are then responsible for delivering those record-setting aerospace systems. For example, the C-17 Globemaster III program reduced cost, improved quality and delivered – ahead of schedule – aircraft that are more reliable,

maintainable and capable than any other transport aircraft in the world. New C-17s are sent straight to the field and are operating from austere airfields in Afghanistan and Iraq within a week of delivery.

ASC's airborne reconnaissance experts acquire, modify, flight test and sustain the world's premiere airborne reconnaissance, intelligence and special mission systems. These include the U-2, unmanned aerial vehicles, RC-135W Rivet Joint, RC-135U Combat Sent, EC-130E Commando Solo and EC-130H Compass Call, as well as their associated ground stations.

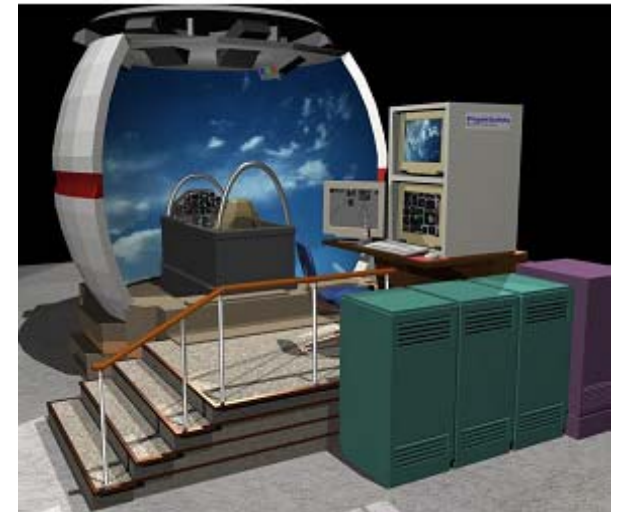
The center has refined the process of developing and acquiring cost-effective, quality training devices that provide realistic training, improved aircrew proficiency and operational readiness.

In addition, ASC trainers are working with the warfighting commands on a new front – distributed mission training – to allow aircrews to train as multi-ship formations using geographically-dispersed, high fidelity cockpit simulators around the country. This new type of training enables aircrews to learn engaged maneuvers, develop complex team fighting concepts, or conduct full mission training in a



simulated combat environment – with much less expense and risk than that involved in flying such training missions in real aircraft.

Also on the center's staff are experts in financial management, contracting, subsystems, program development, electronic combat, reconnaissance and testing. With its world class resources, ASC can rapidly assemble a team of experts to work any aeronautical or aerospace project.



Delivers an Unwavering Focus on Operational Needs

The acquisition process has evolved so that warfighting effects, and the capabilities needed to achieve them, are its driving force. Central to this effort are the Task Force Concepts of Operations (CONOPS) - that guide Air Force planning and programming, requirements reform and acquisition.

As part of this process, the Capabilities Review and Risk Assessment (CRRRA) has shifted focus from individual airframes to how Air Force programs contribute to warfighting capabilities and effects. CRRRA's goal is to give leadership an operational, capabilities-based focus for acquisition program decision-making.

ASC's role in the process is to inform operational command planners of systems or technologies that could feasibly be developed to help fulfill capability needs. Operational commanders then make decisions on program and budget priorities that become part of the Planning, Programming, Budgeting and Execution (PPBE) process. As formal requirements are generated,

funding for specific programs is projected against future years and the acquisition process begins.

Through a management framework known as Aeronautical Enterprise, ASC aims to deliver aeronautical capabilities -- properly integrated with capabilities from other Enterprises -- with better, more innovative management and phased improvements throughout the life cycle of the system, a concept known as spiral development.

Spiral development is a transformational tool for developing aircraft capabilities in increments for rapid delivery of the most critical capabilities to combat units. This tool is markedly reducing acquisition cycle time by using requirements and technology development processes that do not seek to deliver the end item as 100% complete the first time. Instead, the operator in the field uses the product, gains experience and provides lessons learned that are then applied to the next

cycle of development.

To make this approach successful, ASC is relying on a collaborative requirements process, seamless verification, focused systems engineering, stable funding and realistic cost estimates.

The Large Aircraft Infrared Countermeasures (LAIRCM) program used this process to provide a partial anti-threat solution so C-17 and C-130 aircraft could have self-protection capability from shoulder fired missiles now, with full capability being implemented in a later spiral - solving Air Mobility Command's urgent and critical need for airlift and tanker protection.

Another example of spiral development is the Predator. This unmanned aerial vehicle was successfully flown in the last three conflicts although it had not yet entered its production phase.



EXAMPLE: PREDATOR RECONNAISSANCE CAPABILITY



PREDATOR CAPABILITY TO USE HELLFIRE MISSILE



REAL-TIME VIDEO LINK FROM PREDATOR TO COCKPIT OF AC-130U



Transforming ASC

Critical lessons learned from Operations Desert Storm, Allied Force, Noble Eagle, Enduring Freedom and Iraqi Freedom have demonstrated the importance of new concepts in military leadership, training, innovation and experimentation.

The Department of Defense and the Air Force have a new focus on strengthening joint operations and experimenting with new approaches to warfare that exploit U.S. intelligence advantages and developing transformational capabilities.

One of these concepts involves the Air Force's ongoing transformation to an expeditionary aerospace force, with a growing emphasis on efficiency, innovation and reform.

ASC's transformation is about rapidly delivering capabilities to those prosecuting the War on Terrorism - including capabilities provided by better performance and more cost effective acquisition and sustainment.

In particular, this transformation includes reviewing existing processes and creating new ones for faster decision-making; collaborative spiral requirements and capabilities-based acquisition and sustainment; faster and cheaper sustainment; combined development and operational testing; faster technology transition to enhance task force capabilities; and a multi-skilled, motivated and properly-equipped workforce.

Applies Advanced Program Management

The center has earned a reputation for effective management. It has been acclaimed for establishing a performance-based business environment including Contractor Performance Assessment Reports, the integrated risk assessment and systems engineering process; integrated product development; software development and evaluation capability; and its modeling, simulation and analysis.

Streamlining initiatives are producing acquisition programs that operate faster, better, cheaper and smoother. For example, to meet the future needs of the B-1 force, the B-1 program office developed a comprehensive business strategy to satisfy both currently programmed and future requirements - the B-1B Next Enhancement (BONE) contract.

The BONE contract is an indefinite delivery, indefinite quantity contract, with an unfunded ceiling of \$4.5 billion that is broadly scoped and long-duration. This hybrid contract type meets the tenets of acquisition reform by providing a flexible, stream-

lined vehicle that is a faster, better and cheaper way to satisfy the needs of Air Combat Command. The BONE contract allows the warfighter's urgent combat mission needs to be placed on contract in hours instead of months.

In another example, the F-16 program office's Frequency Modulation Immunity upgrade saved the government \$33 million and gave the warfighter the capability four years ahead of schedule by finding an existing off-the-shelf commercial item.



By creatively restructuring its acquisition approach, the B-2 program office was able to provide fully integrated Joint Air-to-Surface Standoff Missile (JASSM) and EGBU-28 Bunker Buster capability to the field two years ahead of schedule, supporting the Air Force's commitment to Agile Acquisition.

And the F-15 program office implemented the Electronic Specifications Access System in June of 2003. This system manages and tracks F-15 specifications, providing the user the ability to access specifications electronically with full content search capability and eliminating archaic paper methods of posting Specification Changes Notices. As a result, what previously took 30-60 days to post now takes only two hours.



Contains Built-in Flexibility for Rapid Joint and Coalition Support

Quick reaction! U.S. airmen provide support in hot spots all over the world – fighting terrorists, supporting peacekeeping operations, providing humanitarian relief, ensuring treaty compliance and fulfilling a variety of other missions. Using streamlined acquisition and innovative planning, ASC contributes to coalition efforts across the globe by providing “quick turn” solutions to theater commanders that manage those operations. For example:

- Following the Sept. 11, 2001 terrorist attacks, F-16s were the primary aircraft providing airspace security during Operation Noble Eagle. Armed with precision-guided munitions and advanced targeting systems that were made fully operational within 48 hours, these aircraft were also active in the bombing over Afghanistan for Operation Enduring Freedom.
- The F-15 program office provided F-15E pilots a combat-capable Link 16 system – a network of

radios used to pass information among battlefield players – in just six weeks for use in Enduring Freedom. “Time-critical targeting information is what it takes to fight terrorism today,” said senior leaders in the F-15 program office, “and that’s what we’re giving theater commanders with the F-15 Fighter Data Link (Link 16).” The program office has accelerated production and installation of the data link by as much as two years.

- ASC rapidly responded to the need for C-17 nose landing gear axle adapters in support of Enduring Freedom. The C-17 program office compressed the seven-month acquisition time to deliver 25 adapters into only six weeks, ensuring that nose landing gears could be changed without needing to deploy a mission recovery team.
- In addition, the C-17 supported U.S. Army Airborne operations during Iraqi Freedom by completing aircraft integration analysis and airworthiness tests within 10 days, to lift Air Mobility

Command in-flight restrictions on satellite communication radios.

- In response to a request by Air Combat Command, the F-117 program office provided the Expanded Enhanced Guided Bomb Unit “Smart Weapon” for operational use in Iraqi Freedom in less than two weeks.
- Less than 24 hours after the Air Force Chief of Staff’s approval, the B-1 program office awarded a production contract for a cockpit-compatible Night Vision Imaging System for Enduring Freedom - resulting in supportable combat capability in less than four months.
- The B-2 program office accelerated by several months the installation of portable shelters at forward-deployed locations to allow maintenance on the aircraft’s low observable materials, facilitating basing the bombers closer to combat zones, boosting sortie rates and cutting flight times.



Contributes to Joint and Coalition Programs

Twenty-eight people were deployed to erect the first two shelters nearly two weeks ahead of schedule.

- In just 10 days the B-2 program office also certified the B-2 to carry a new "CRASH PAD" Joint Direct Attack Munition (JDAM) designed to incinerate chemical/biological weapons in Iraqi Freedom.
- The Special Forces program office arranged and conducted flight tests to allow installation of new software for SF aircraft six months ahead of schedule. This enabled the software to be in place for deployment in support of Iraqi Freedom.
- The Halvorsen Loader team delivered 89 loaders five months ahead of schedule - increasing the fleet to 245. They also activated an additional ten sites for a total of 98 locations worldwide. The Halvorsen is a rapidly deployable, high-reach mechanized aircraft loader.



JOINT PROGRAMS

ASC has managed and contributed to dozens of joint programs throughout the years. Current airframe programs include the Joint Primary Training Aircraft System (T-6 Texan II) and the CV-22 Osprey. In addition, the center manages the unmanned aerial vehicle programs that support all four services.

ASC also leads key research and engineering efforts for development of the Joint Strike Fighter. This program – whose participants include Great Britain, Canada, Denmark, Norway and the Netherlands – provides the U.S. Air Force with a multi-role aircraft to replace the F-16 and A-10. It will give the U.S. Navy a survivable strike fighter to complement the F/A-18E/F, and the U.S. Marine Corps a multi-role short takeoff and vertical landing aircraft to replace the AV-8B and F/A-18.

Joint subsystem programs include Joint Chemical Agent Detector; Joint Service Aircrew Mask; Joint Signal Intelligence Avionics Family, including programs to test and migrate signals intelligence

systems onto DoD platforms; Joint Modeling and Simulation System; Joint Helmet-Mounted Cueing System; and Joint Service Electronic Combat Systems Tester.

FOREIGN MILITARY SALES

ASC provides superior customer service in the acquisition of its world class weapon and support systems through its Foreign Military Sales (FMS) program. At present these systems include: F-15 and F-16 aircraft, C-17 Maintenance, Precision Attack Systems, Reconnaissance Systems, Training Systems, Large Aircraft Infrared Countermeasures (LAIRCM), and the Common Munitions Built-in Test Reprogramming Equipment (CMBRE). These systems are acquired in conjunction with other FMS case line managers throughout the Air Force.

At present, ASC program offices are directly responsible for FMS acquisitions for 27 different foreign customers with a combined value of \$37.1 billion. Accounting for the greatest portion (78%) of the ASC FMS business base is the F-16.

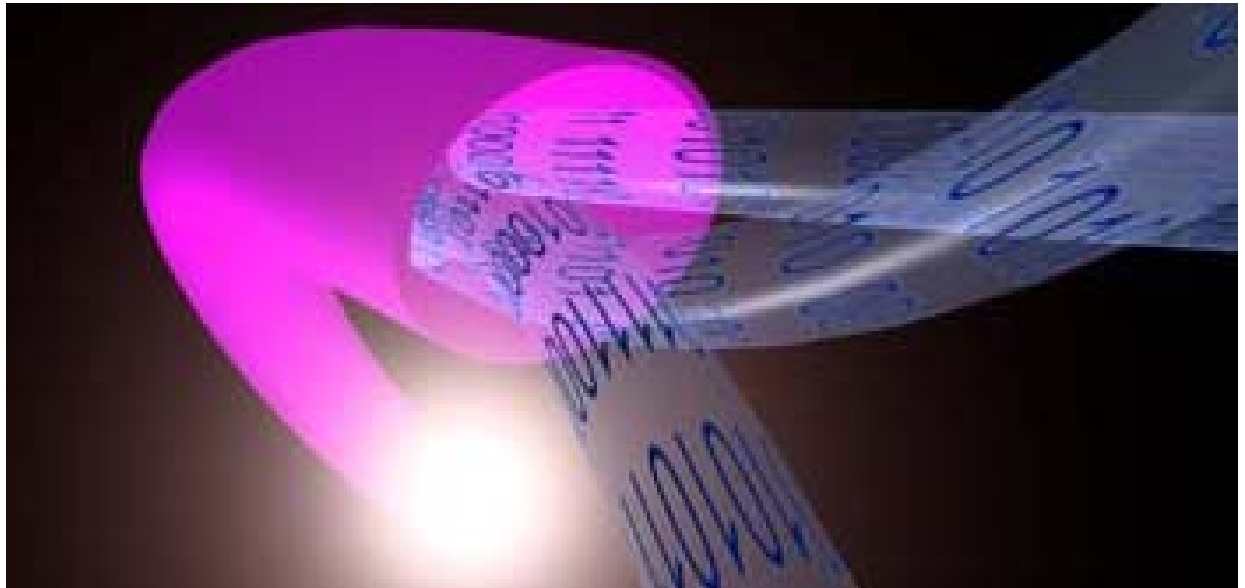
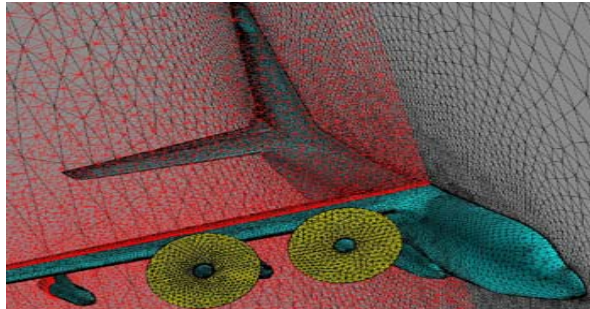


Employs an Advanced Complex of Research Facilities

ASC has the latest in facilities for programs requiring integrated, secure office space and easy access between program staff. The new acquisition management complex houses several ASC program offices and provides sophisticated, secure computer interface capability and one of the largest secure video teleconference centers in the U.S. Using a unique concept made possible only by communications and computer technology, ASC uses "Virtual Integrated Product Teams" that are manned by experts from across Air Force Materiel Command and other federal agencies around the country.

Also at ASC is the Advanced Computational Analysis Directorate that provides expertise and infrastructure crucial to application of rigorous modeling, simulation and analysis required for sound acquisition, technology and test decisions. Relying on a mixture of organic and matrixed personnel, the Directorate is responsible for the operation, sustainment, enhancement and application of two world-class modeling and simulation facilities: the Major Shared Resource Center (MSRC) and the Simulation and Analysis Facility (SIMAF).

The MSRC is a full service facility -- housing seven of the world's largest supercomputers -- that provides high performance computing support and computational science consulting to Department of Defense researchers, scientists, engineers and contractors. This outstanding capability is used to solve large computational problems in fluid dynamics, structural mechanics and other scientific disciplines that can not be solved on today's conventional computers.



Partners with Air Force Research Laboratory

While the Major Shared Resource Center provides computational capability to support fundamental technology development for new and modernized weapon systems, the Simulation and Analysis Facility provides a virtual environment to demonstrate technology and weapon systems in real-world scenarios.

The SIMAF involves Air Force planners and operators in the evaluation of new technology – as well as new and modernized weapon systems – by putting them in a virtual operating environment. This capability enables the planners and operators to *experience* the systems and evaluate them before having to commit to the final product design and production.

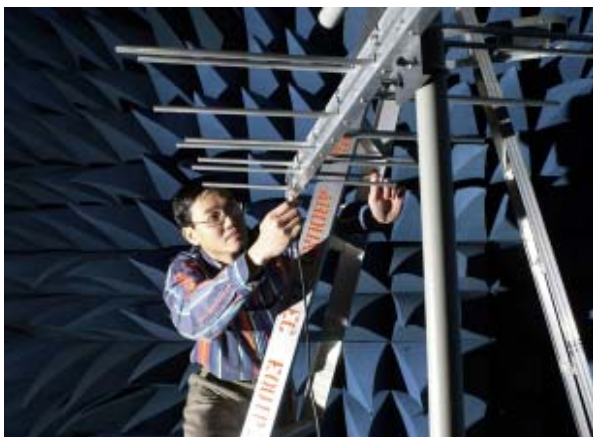
Air Force Research Laboratory, and five of its technology directorates, are also headquartered at Wright-Patterson. Each technology directorate performs, procures and synthesizes basic research, exploratory technology development and advanced technology development within its designated area

of responsibilities, with a clear mandate to provide integrated solutions to customer requirements. Underscoring this critical customer priority, AFRL features a single planning and budgeting directorate to assure a comprehensive, integrated laboratory response to customer needs.

AFRL contributes as well to the development of ASC's weapon systems. ASC's acquisition work force routinely collaborates with scientists and engineers at the laboratory's research directorates located around the country. Directorates located at Wright-Patt discover and develop leading-edge technologies in propulsion, sensors, materials and manufacturing, air vehicles and human effectiveness.

That technology is developed using a variety of sophisticated tools. Among them: a virtual reality cockpit and command center simulators, advanced compressor and turbine research equipment, a fuel systems simulator, mechanical and thermal testing for integrated structures, computational fluid dynamics research, simulation based research and

development for air vehicle and weapon system technology, a laser-hardened materials evaluation lab, a modeling system for advanced investigation of countermeasures, an antenna wavefront simulator to evaluate current and future antenna jamming environments and a virtual distributed laboratory supporting development and evaluation of automatic target recognition and sensor fusion technology.



Provides "Human-Centered" Products from its 311th HSW

Aeronautical Systems Center also provides "human-centered" research, development, acquisition and specialized operational support through its 311th Human Systems Wing, located at Brooks City-Base, Texas.

The wing develops and acquires "human-centered" products to improve the readiness and warfighting capabilities of Air Force and Department of Defense weapons and support systems. These products are used to manage health and safety risks.

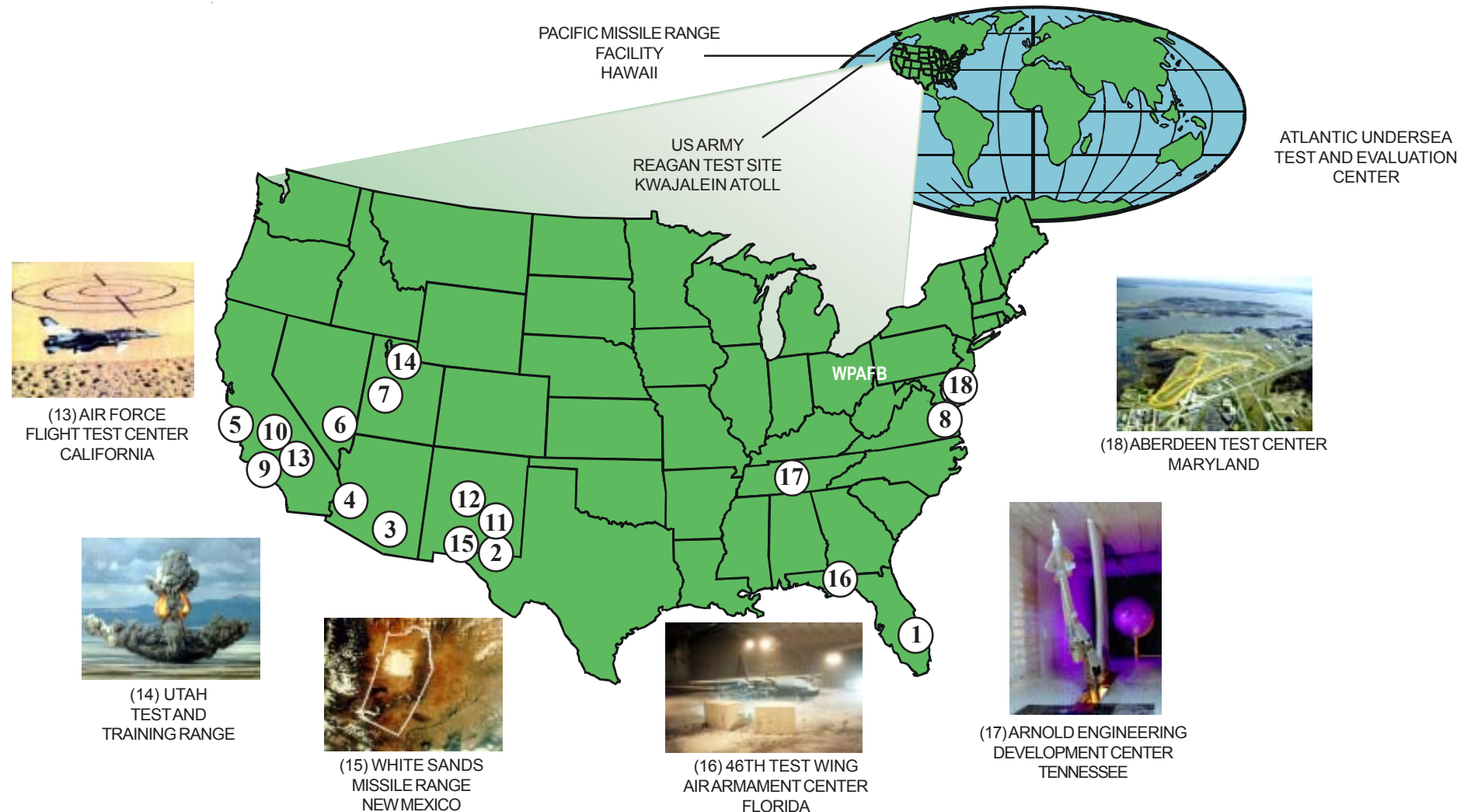
The wing's responsibilities include aerospace medicine; crew systems; environment, safety and

occupational health; and human resources. To fulfill these responsibilities, the 311th HSW provides advanced performance, survival and training technologies—managing approximately 140 technology, acquisition and sustainment programs worth \$300 million.

In addition, the wing's Air Force School of Aerospace Medicine provides worldwide operational support to Air Force, DoD and allied nations personnel. The wing also provides medical education to more than 5,000 entry-level through graduate-level students annually.



Utilizes Test Facilities Around the Globe



In addition to those shown, ASC makes use of facilities at the 45th Space Wing, Patrick AFB FL (1); High Energy Laser Systems Test Facility, White Sands NM (2); Electronic Proving Ground/Joint Interoperability Test Center, Ft Huachuca AZ (3); Yuma Proving Ground, Yuma AZ (4); 30th Space Wing, Vandenberg AFB CA (5); Nevada Test and Training Range/Air Warfare Center, Nellis AFB NV (6); Dugway Proving Ground, Dugway UT (7); Naval Air Warfare Center, Aircraft Division, Patuxent River MD (8); Naval Air Warfare Center, Weapons Division, Pt Mugu CA (9); Naval Air Warfare Center, Weapons Division, China Lake CA (10); 46th Test Group, Holloman AFB NM (11); and the Air Force Operational Test and Evaluation Center, Kirtland AFB NM (12).

Enjoys a Collaborative Relationship With Units at Wright-Patterson



ASC has strong ties to many of the units located at Wright-Patterson Air Force Base. In addition to the Air Force Research Laboratory, Wright-Patterson is also home to the following:

- Headquarters, Air Force Materiel Command, the center's parent command, directs a highly professional and skilled work force of more than 85,000 military and civilian employees. AFMC delivers war-winning expeditionary capabilities through technology acquisition support and sustainment and by focusing on management, research, acquisition, development, testing and maintenance of existing and future weapon systems and their components. It fulfills its mission through a series of facilities that foster "cradle-to-the-grave" oversight for aircraft, missiles, munitions and the people who operate them.

- The Air Force Institute of Technology provides specialized education in science, technology and management for the Air Force and Department of Defense and is accredited to award masters and doctoral degrees. AFIT also provides research and consultation for engineers and logisticians, including civil engineers and environmental program managers.

Many students specializing in engineering and science pursue research for their advanced degrees - AFIT performs over \$25 million worth of Air Force research annually. Much of that directly supports ASC weapon system and subsystem acquisition and development.

In addition, through their Civilian Institution Program AFIT directs the masters, doctoral and

professional continuing education of some 5,800 Air Force officers and airmen at almost 450 civilian colleges, universities, medical schools and industrial firms worldwide.

AFIT has also bolstered the local area's education and research capabilities by joining the University of Dayton and Wright State University to create the Dayton Area Graduate Studies Institute for sharing students and facilities.

- The Air Force Security Assistance Center develops and executes international agreements with friendly foreign forces to provide defense materiel and services in support of U.S. national security. AFSAC negotiates cases directly with over 90 countries and international organizations and provides materiel and services to support over 6,600 aircraft - including 170 different models that range from vintage fighters to modern F-15, F-16 and Boeing 767 AWACS aircraft.

- The Defense Institute of Security Assistance Management provides education programs for more than 2,000 U.S. military, civilian and foreign personnel each year. In addition, DISAM performs research and consultation services for the global security assistance community, conducts an information dissemination program and provides selected automation support to overseas security assistance programs.

- The Defense Technical Information Center, whose Midwestern Office is located at Wright-Patterson, is the DoD clearinghouse for the collection and dissemination of scientific and technical information flowing in and out of the DoD

Shares Wright-Patterson with a Unique Blend of Organizations

research and development cycle. Much of this information is in the form of technical reports and summaries related to research. DoD personnel, DoD contractors, potential contractors and other U.S. government agencies are eligible to access this information.

- The National Air and Space Intelligence Center, a unit of the Air Intelligence Agency, analyzes all available data on foreign air and space weapon systems to determine performance characteristics, capabilities and vulnerabilities. NASIC assessments and services play a key role in assuring that American forces can counter foreign air and space threats and avoid strategic surprise. They provide national decision makers, operational commands and the acquisition community the timely, integrated and relevant intelligence products needed to establish national intelligence estimates, to support international treaty initiatives, to assist in joint operations and to help in the design of superior U.S. air and space systems.

- The United States Air Force Band of Flight provides quality music and entertainment for a wide variety of official military, recruiting and community relations events. The Band of Flight has represented the Air Force to the Midwest since 1942, travelling over 100,000 miles and presenting more than 450 performances every year. Their area of responsibility reaches from Michigan to Kentucky and from Indiana to West Virginia, including almost one-quarter of the nation's population.

- The United States Air Force Museum hosts more than 1.2 million visitors a year, and is recog-



nized as the world's largest and oldest military aviation museum.

- The 445th Airlift Wing, Air Force Reserve Command, is home to the Hanoi Taxi and operates C-141s to provide the strategic transport of personnel and equipment worldwide and aeromedical evacuation. The wing was recently involved in transporting wounded soldiers, including former POWs, from Ramstein AB, Germany to Andrews AFB, Md, during Operation Iraqi Freedom.



Serves as a Proud Member of the Wright-Patt Community



Wright-Patterson is in many ways the largest, most diverse and organizationally complex base in the Air Force.

The size of a small city, the base is made up of hundreds of facilities, including family housing and single airmen dormitories, police and fire departments, three chapels, several day care centers, restaurants and two 18-hole golf courses.

Other on-base support facilities include multiple education and recreation complexes, a large commissary (with nearly four acres under one roof), a 260-room hotel and conference center and the second largest medical center in the Air Force.

Recognizing the decisive role families play in a member's decision to remain in the military or DoD civilian service, officials place an emphasis on the quality of life for all employees and families at Wright-Patterson. Base commanders make a concerted effort to increase awareness of, and evaluate, current quality-of-life programs.



Supports its Neighbors Throughout the Miami Valley

Because our people are part of the local community and support for ASC and the base is so fundamental, commanders consider Team Wright-Patt to be a combination of both the base and the local community.

Dayton and Wright-Patterson forged a partnership in 1925 when community leaders purchased and donated 4,500 acres of land to the government to build a permanent airfield – Wright Field. Today the base has more than 8,000 acres and is the largest single-site employer in Ohio, employing almost 1 of every 20 people working in the greater Dayton area.

Dayton and Miami Valley leaders have long recognized the base's importance to the area's economic stability. The base pours more than \$3 million a day into the community in salaries and has a total economic impact of nearly \$2.6 billion a year.

Wright-Patterson also supports the community through the Combined Federal Campaign. Base military and civilian employees have contributed

more than \$42 million during the past 20 years.

Over the years the community has continued to strongly support the base's leadership role in aerospace. Community investments include emergence of the National Center for Industrial Competitiveness, to promote industry use of defense technologies; establishment of Wright Technology Network, a regional network for technology exchange between industry and government; and promotion of financial incentives and relocation assistance packages for corporations moving into the region.

Wright-Patterson's Educational Outreach program forges partnerships between the base and the K-12 education community to increase student awareness and excitement in all fields of math, science, aviation and aerospace, matching Wright-Patterson technology, resource and expertise with student and educational community needs.

The community also was involved with the creation of the Dayton Area Graduate Studies Institute to promote postgraduate education in aerospace and the sciences at area universities and the Air Force Institute of Technology. In addition, the community has contributed to initiatives recognizing other types of Air Force contributions, such as the construction of Valor Park to recognize those who have received the Medal of Honor.



At the Leading Edge of Aerospace Technology

Aeronautical Systems Center:
Birthplace, Home, and Future
of Aerospace

*Our goal is
mission success through
speed and innovation,
rapid technology transition,
a high performance workforce
and partnerships.*

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